Business & Enterprise Systems

Integrity - Service - Excellence

Work Breakdown Structures (WBS)

Current: 14 January 2015

Expectations

- This course is designed to introduce the Work Breakdown Structure (WBS), its purpose, and its uses to Program/Project Managers and Team Members

- Describe the relationship of the WBS to the BES Process Directory (BPD), Program Tailoring Worksheet, and Integrated Master Schedule (IMS) development
  - Introduce the organizational standard WBS, its purpose, and its uses

Introductions

- Please tell the class about yourself…
  - Name
    - Program or Project Assignment?
    - Assigned Role?

Definitions

- **Work Breakdown Structure (WBS)**

"The WBS defines the program in terms of hierarchically-related, product-oriented elements and may include generic activities that support product development (operations, overhead). It represents the entire program from the Government Program Manager's responsibility."

"…displays and defines the product, or products, to be developed and/or produced. It relates the elements of work to be accomplished to each other and to the end product. In other words, the WBS is an organized method to breakdown a product into sub-products at lower levels of detail."

"A product-oriented family tree composed of hardware, software, services, data, and facilities. The family tree results from program planning and systems engineering efforts during the acquisition of a defense materiel item."

- **SOURCE: Military Standard (MIL-STD) 881C, Oct 2011**

Levels of the WBS

WBS Levels:

- **Level 1 is the entire system and/or program, project or subprogram (e.g., mission applications).**
- **Level 2 elements are the major elements subordinate to Level 1. These major elements are usually prime mission products, which include all hardware and software elements. Level 2 elements also include aggregations of system-level services (e.g., systems engineering, program management, etc.) and data.**
- **Level 3 elements are subordinate elements of each Level 2 major elements and include hardware, software, services (e.g., requirements management, configuration management, design/development, test and evaluation, etc.) and data.**
- **Level 4 elements represent a further definition (subordinate to Level 3) of the hardware, software, services, and data following the same process of breakdown described above.**

WBS Composition

WBS Composition:

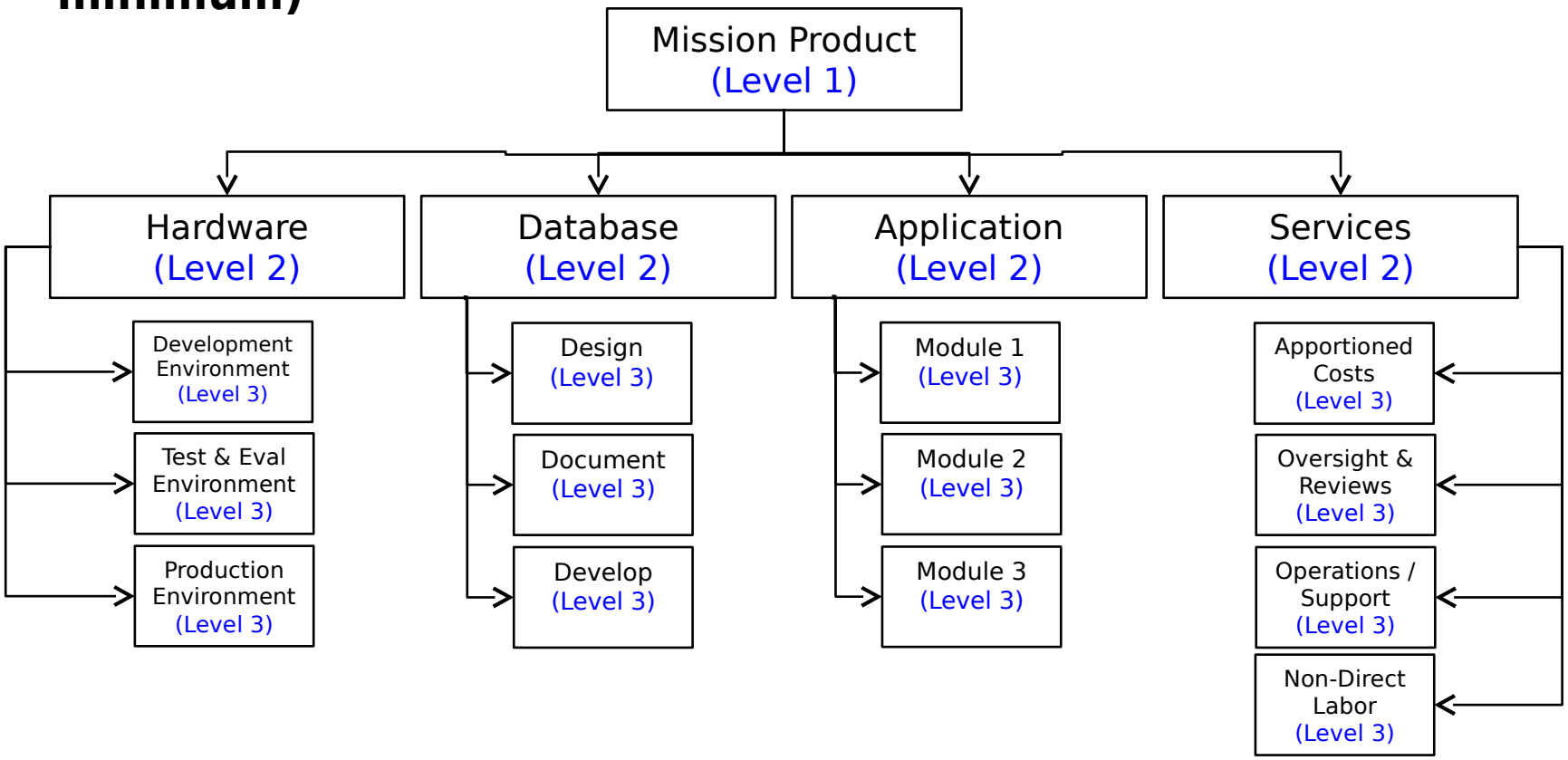
- **Program WBS:** **The Program WBS encompasses an entire program, *including* the Contract WBS. It defines, at Level 4 (minimum), what is to be produced (with associated definitions). It contains *uniform terminology, definitions, and placement* in the product-oriented family tree structure. The Government Program Manager is responsible for the Program WBS.**

- **Contract WBS:** **The Contract WBS is the agreed-to contract reporting level and includes any discretionary extensions to lower-levels for reporting. It defines these lower-level components as to what is to be produced and includes all the product elements (hardware, software, services, data or facilities). The Contract WBS should identify everything for which the contractor is responsible. The Contract WBS is prepared by the Prime contractor should also include all sub-contractor inputs.**

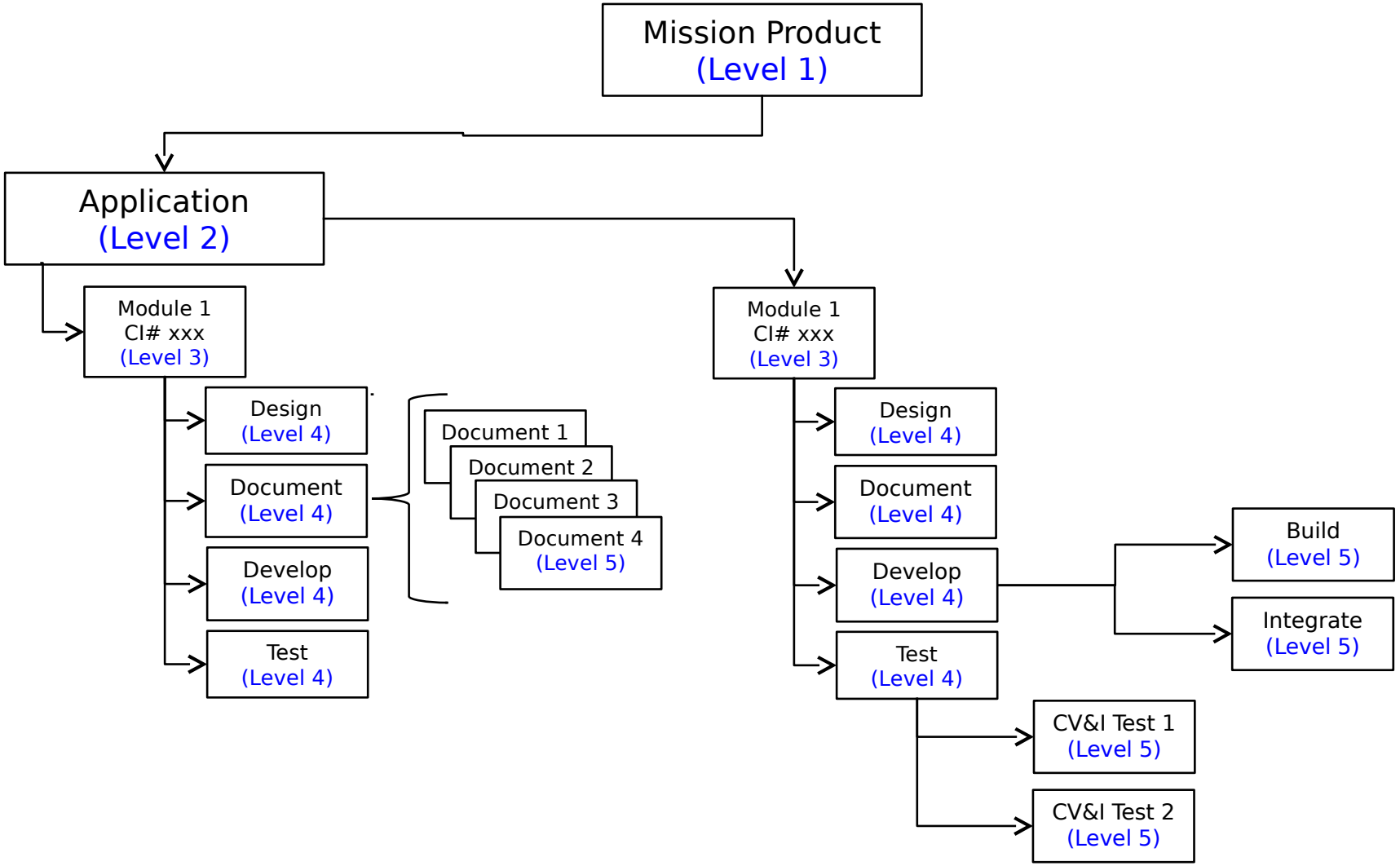
WBS Preparation

WBS Planning:

- **Define the Levels of the WBS for your program (Level 4 minimum)**



WBS Preparation (Cont'd)



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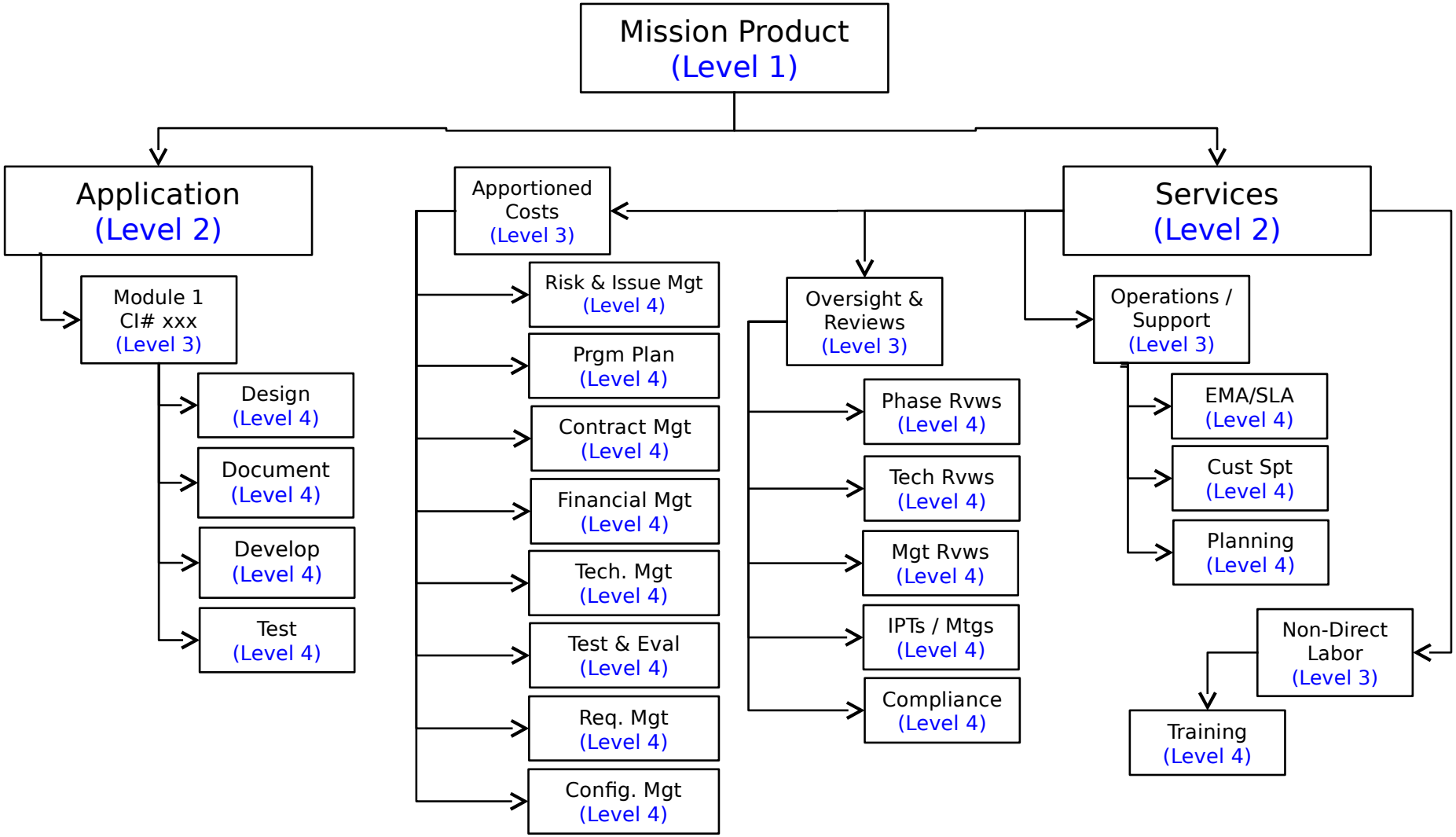

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Sample WBS Hierarchy

Level	Code	Description
1	1.0	Mission Product
2	**1.1**	**Hardware**
3	1.1.1	Development Environment
3	1.1.2	Test & Evaluation Environment
3	1.1.3	Production Environment
2	**1.2**	**Database**
3	1.2.1	Design
3	1.2.2	Document
4	1.2.2.1	Design Document
4	1.2.2.2	Database Specification
4	1.2.2.3	ER Diagram
4	1.2.2.4	Database Dictionary
3	1.2.3	Develop
4	1.2.3.1	Build
4	1.2.3.2	Integrate
2	**1.3**	**Application**
3	1.3.1	Module/CI #1
4	1.3.1.1	Design
4	1.3.1.2	Document
5	1.3.1.2.1	Requirements Specifications
5	1.3.1.2.2	Design Document
5	1.3.1.2.3	Test Scripting
5	1.3.1.2.4	Requirements Traceability Matrix
4	1.3.1.3	Develop
3	1.3.2	Module/CI #2
3	1.3.3	Module/CI #3
2	**1.4**	**Services**
3	1.4.1	Apportioned Costs
4	1.4.1.1	Requirements Management
4	1.4.1.2	Configuration Management
4	1.4.1.3	Risk Management
4	1.4.1.4	Program Management
4	1.4.1.5	Contract Management
4	1.4.1.6	Financial Management
4	1.4.1.7	Technical Management
4	1.4.1.8	Test & Evaluation Management
3	1.4.2	Oversignt & Reviews
4	1.4.2.1	Phase Reviews
4	1.4.2.2	Technical Reviews
4	1.4.2.3	IPTs and Meetings
4	1.4.2.4	Management Reviews
4	1.4.2.5	Compliance Reviews
3	1.4.3	Operations & Support
4	1.4.3.1	EMA / SLA Development
4	1.4.3.2	Help Desk / Customer Support
4	1.4.3.3	Planning
3	1.4.4	Non-Direct Labor
4	1.4.4.1	Training

BES Organizational WBS

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Level	PROGRAM	WBS	Duration	Work
2	RELEASE	0000		
3	Apportioned Cost	MA00		
3	Oversight and Review Products	M000		
3	Contracting	Q000		
3	Logistics / Sustainment	L000		
3	Technical			
2	AIS SUPPORT (Direct Services/Customer Support)	M000		
3	AIS SPT/CUSTOMER SUPPORT	M600		
3	AIS SPT/FINANCIAL	MF00		
3	AIS SPT/SYSTEM ADMINISTRATION	MG00		
3	AIS SPT/CONTRACTING	MK00		
3	AIS SPT/PROGRAM MGT	MP00		
3	AIS SPT/TEST	MT00		
2	AIS TR			
3	AIS TN			
2	Non-La			
3	Technical			
4	*Concept of Operations (ConOps) and Peer Review Minutes*	*AD10*		
4	*System Subsystem Specifications (SSS) and Peer Review Minutes*	*AD20*		
4	*Software Requirements Specifications (SRS) and Peer Review Minutes*	*AD30*		
4	Minutes - Joint Application Design (JAD) Sessions	AD71		
4	Risk Management Plan (RMP) and Peer Review Minutes	AD76		
4	*Software Development File*	*AD80*		
4	*Software Development Plan (SDP) and Peer Review Minutes*	*AD50*		
4	Analysis of Alternatives (AoA)	ADR1		
4	Alternative System Review (ASR) & Minutes	ADR3		
4	Preliminary System Specifications and Peer Review Minutes	ADX1		
4	*Defense business system certification and approval (>$1M)*	*ADX3*		
4	*Database*	*CD00*		
4	*CI #N - Component*	C000		

Aligns with TWS products

53		General Requirements Specification (GRS)	GRS Template
54		Concept of Operations (ConOps)	ConOps Template
55		System Subsystem Specification (SSS)	SSS Template
56		Software Requirements Specification (SRS)	SRS Template
57		Updated RTM	RTM Template
58		Preliminary Design Document (DD)	DD Template
59		Preliminary Database Specification (DS)	DS Template

Product-based…activities support product development

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Project Planning: Incorporating the WBS

- Scope the Project
- Define the Project Products using the Tailoring Worksheet
- Define the WBS (Product Oriented; Activities Support Products)
- Estimate level of effort for WBS products in Planning Packages and Work Packages
- Sequence Planning Packages and Work Packages
- Generate a Schedule (recommend using Microsoft Project)
  - Account for all products and associated packages

Avoiding Common WBS Mistakes

- **Focus on products; remember, schedule activities support development of products**
- **Do not use organizational structure as the basis for your WBS**
- **Ensure Program WBS includes contractor-developed WBS elements (both prime and sub-contractors)**
- **Develop your WBS to meet your needs; number of levels is determined by products**
- **Be consistent with terminology; avoid using verbs**
- **A schedule is NOT a WBS**
- **Use MIL-STD-881C, Appendix K**

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References

- **BES Process Directory (BPD) Supporting Artifacts:**

WBS Procedure

WBS Lexicon

Summary

- **The WBS is a hierarchically-related, product-oriented product**
  - **Displays and defines products and associated level of effort**
  - **Includes Contractor and Government elements in a single WBS**
  - **Government Project Manager is responsible for preparing and maintaining the WBS**
  - **There is no "incorrect" format for a WBS; ensure work packages are aligned and accurate**
- **Alignment of Scope → TWS → WBS → Schedule is critical**

Recap and Feedback

- **Do you have any unanswered questions?**
- **Did we meet the objectives as stated?**
- **Don’t forget to request your CLPs!**
- **Please fill out a critique so we can improve this class for those who may attend in the future; written suggestions are very helpful**